No. 15-1834

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

VEHICLE INTERFACE TECHNOLOGIES, LLC,

Plaintiff – Appellant,

v.

JAGUAR LAND ROVER NORTH AMERICA, LLC,

Defendant – Appellee

On Appeal From the United States District Court
for the District of Delaware
Hon. Richard G. Andrews
C. A. No. 12-1285 RGA
C. A. No. 14-339 RGA

APPELLANT'S OPENING BRIEF

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CERTIFICATE OF INTEREST

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1. The full name of every party or amicus represented by me is:

Vehicle Interface Technologies, LLC

2. The name of the real party in interest represented by me is:

N/A

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

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STATEMENT OF RELATED CASES

VIT is aware of no related cases.

JURISDICTIONAL STATEMENT

(a) The district court had jurisdiction under 28 U.S.C. § 1331 and 1338(a). VIT alleged infringement of U.S. patent no. 6,842,677 ("'677 Patent"). Joint Appendix ("A") 50-53.

(b) The district court entered a final judgment on February 6, 2015. A25-26. This Court has jurisdiction under 28 U.S.C. § 1295(a)(1).

(c) VIT filed a notice of appeal on March 6, 2015. The appeal is timely under Federal Rule of Appellate Procedure 4(a)(1)(A).

STATEMENT OF ISSUES

Whether the district court erred when it construed the term "pages" to mean "a collection or section of information that can be displayed on a screen at one time."

Whether VIT's construction of pages, "one complete full-screen image, including formatting such as shapes, colors, and rotation of fonts," should be adopted.

Whether, under the proper construction of "pages," Jaguar Land Rover North America, LLC, ("JLRNA") established anticipation of the asserted claims of

the ‘677 Patent by the 2001 Mercedes Benz reference by clear and convincing evidence.

STATEMENT OF THE CASE

On October 5, 2012, VIT filed a complaint alleging infringement of the ’677 Patent by JLRNA. A50-53. VIT asserted that claims 1, 2, 3, 5, and 6 of the ’677 Patent were infringed by, among other features, the virtual instruments and/or integrated controls of the Jaguar XJ. A50-53. On the same date, VIT also sued Ford Motor Company (“Ford”), Ferrari North America, Inc. (“Ferrari”), and Porsche Cars North America, Inc. (“Porsche”) for infringing the ‘677 Patent. After settlements, the cases against Ferrari and Porsche were dismissed on April 29, 2014, and, with an appeal pending, against Ford on July 28, 2015.

The ’677 Patent describes a vehicle user interface that displays information and allows a driver to operate various features while keeping both hands on the steering wheel. *See e.g.*, A2972 (1:47-50). Today, automakers build vehicles with increasingly numerous and complex features that allow the use of subsystems for entertainment, navigation, and other purposes. The efficient display and operation of these features can be challenging, given the space limitations of a vehicle’s interior and the overarching importance of minimizing driver distraction. *Id*. at 1:22-27. The interface of the ’677 Patent minimizes the time a driver’s focus is

away from the road by using steering wheel inputs and a visually efficient means of displaying information about vehicle operations and features. *Id*. at 1:47-52.

Claim 1 of the ’677 Patent reads as follows:

> 1. A user interface system for a vehicle having a steering device, the system comprising:
>
> a plurality of pages, wherein each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle;
>
> a display mounted behind the steering device, the display including a fixed area and a selectable area, wherein the fixed area displays vehicle information and the selectable area displays one of the plurality of pages, and wherein the fixed area and the selectable area each comprise a unique and static portion of the display; and
>
> a computing system in communication with the display device, wherein the computing system operates each of the plurality of optional subsystems based on the at least one parameter.

As explained below, the dispute presented in this appeal involves the construction of the term “pages.”

The district court coordinated claim construction in the four cases filed by VIT, and a joint claim construction process ensued. The parties agreed to certain constructions, and eventually presented several disputed terms to the district court for resolution. *See* A163, A173, A192, A202, A206. On January 13, 2014, the court issued a Memorandum Opinion construing one term, A478-481, and on January 24, the district court issued a Claim Construction Order setting forth the stipulated constructions of four other claim terms from the ’677 Patent. A482.

(construing "parameter(s)," "optional subsystem(s)/optional subsystem(s) for the vehicle," "steering device," "wherein the fixed area and the selectable area each comprise a unique and static portion of the display," and "set of input devices").). During this process, none of the parties requested that the district court construe the term "pages."

On October 3, 2014, JLRNA filed a motion for summary judgment in which it argued that the '677 Patent was anticipated by the 2001 Mercedes and anticipated or rendered obvious by the Palalau reference. A488. JLRNA also argued that the Jaguar XJ did not infringe the '677 Patent. *Id*. JLRNA acknowledged VIT's position that the menus of the 2001 Mercedes Benz did not anticipate the "pages" described by the '677 Patent, but JLRNA did not offer a construction of "pages." A493. JLRNA stated that "'[p]ages' in the context of the '677 Patent do not require certain appearance characteristics, such as shapes, colors or graphics." A494. JLRNA elaborated that ordinary usage of the term "pages" includes "any writing, such as text, shapes or graphics," and "[f]or example, a 'page' of a book often includes only text." *Id*. JLRNA thus noted, consistent with common parlance, that a "page" of a book "includes" text, the text appearing on a page, rather than constituting a "page."

VIT offered a construction of "pages" in opposition to JLRNA's motion, stating that "page" means "one complete full-screen image," a definition that

appears in the Microsoft Computer Dictionary. A1340-41. In reply, JLRNA offered its own construction, arguing that "'[p]ages' in the '677 Patent means collections or sections of information that can be displayed on a screen at one time." A1470. "Collection" and "section" do not appear in the '677 Patent. Contrary to its recognition that text or other "information" is "included" on a page of a book, JLRNA now argued that a "collection" or "section" of "information" *is* a "page" for purposes of the '677 Patent. JLRNA did not challenge the reliability or appropriateness of the Microsoft Computer Dictionary as a source of relevant extrinsic evidence.

During the summary judgment hearing, VIT provided additional refinement on its construction, relying on expert testimony previously submitted by its expert Michael Nranian. A1906 at lines 4-7 ("A complete full-screen image, including formatting such as shapes, colors, rotation of fonts."). In addition, VIT acknowledged that the summary judgment dispute boiled down to the dispute regarding the proper construction of "pages." A32.

On January 21, 2015, the district court issued a Memorandum Opinion granting JLRNA's summary judgment motion. A28-39. The court rejected VIT's proposed construction of "pages," in favor of the reply-brief proposal by JLRNA, meaning that "any collection or section of information that can be displayed on a screen at one time" became a "page." The district court also stated that "pages"

has a "broad definition" "requiring only the inclusion of 'at least one parameter for at least one of a plurality of optional subsystems for the vehicle,'" but it does not appear that the court intended by this comment to modify the "collection or section" construction. A37.

The district court concluded that "[t]here is nothing in the claims or the specification that requires a 'page' to be a 'complete full-screen image,' or to have a certain degree of 'formatting.'" A35. The court gave no weight to the expert testimony or extrinsic evidence cited by VIT. A36 ("Mr. Nranian's testimony and Microsoft Computer Dictionary are both sources of extrinsic evidence, which the Federal Circuit has said is 'less significant than the intrinsic record.'") (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (*en banc*)).

Having resolved the claim construction issue against VIT, the Court held that the asserted claims of the '677 Patent are anticipated by the 2001 Mercedes Benz reference. A38. On June 25, 2015, the Court entered judgment following a stipulation of the parties. A25-26. VIT filed a timely notice of appeal on July 10, 2015.

SUMMARY OF THE ARGUMENT

"Anticipation is a question of fact, and is determined by first construing the claims and then comparing the properly construed claims to the prior art." *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1346 (Fed. Cir. 2002) (citing *Gen'l Elec.*

Co. v. Nintendo Co., 179 F.3d 1350, 1353 (Fed. Cir. 1999) and *Gechter v. Davidson*, 116 F.3d 1454, 1457 (Fed. Cir. 1997)). To sustain its burden to prove the asserted claims of the '677 Patent anticipated by clear and convincing evidence, JLRNA was required to establish the proper construction of the claims and then to demonstrate that all of the limitations of the claims were present in a single prior art reference, arranged as in the claim. *See Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2242-43 (2011).

When JLRNA filed its motion for summary judgment, it did not present a plausible construction of the term "pages." The construction ultimately adopted by the district court, based on the reply brief argument by JLRNA, is erroneous. The district court concluded that the '677 Patent makes a "page" a "collection" or "section" of "information" that "can be displayed on a screen at one time," although it did not define any of the terms employed in its construction. The court's focus on "information," rather than the "page" of Figures 1 and 2 of the '677 Patent was incorrect, and the suggestion that a "collection" or "section" of "information" is a page when it "can be displayed on a screen at one time" would create multiple "pages" where the '677 Patent makes clear there is only a single "page."

VIT's proposed construction properly captures the meaning of "pages" reflected in the '677 Patent. Each depiction of a "page," and all of the references

in the patent to "pages," makes clear that a "page" is not a disembodied "collection" or "section" of "information." A "page" is, consistent with the plain meaning of the term, a complete full screen image, not "information" that "can be displayed on a screen at one time."

Because the court did not address the question of anticipation by the 2001 Mercedes Benz by reference to a proper construction, remand is required to determine whether, under the properly construed claims, the 2001 Mercedes Benz anticipates the asserted claims of the '677 Patent.

I. ARGUMENT.

A. Standards of Review.

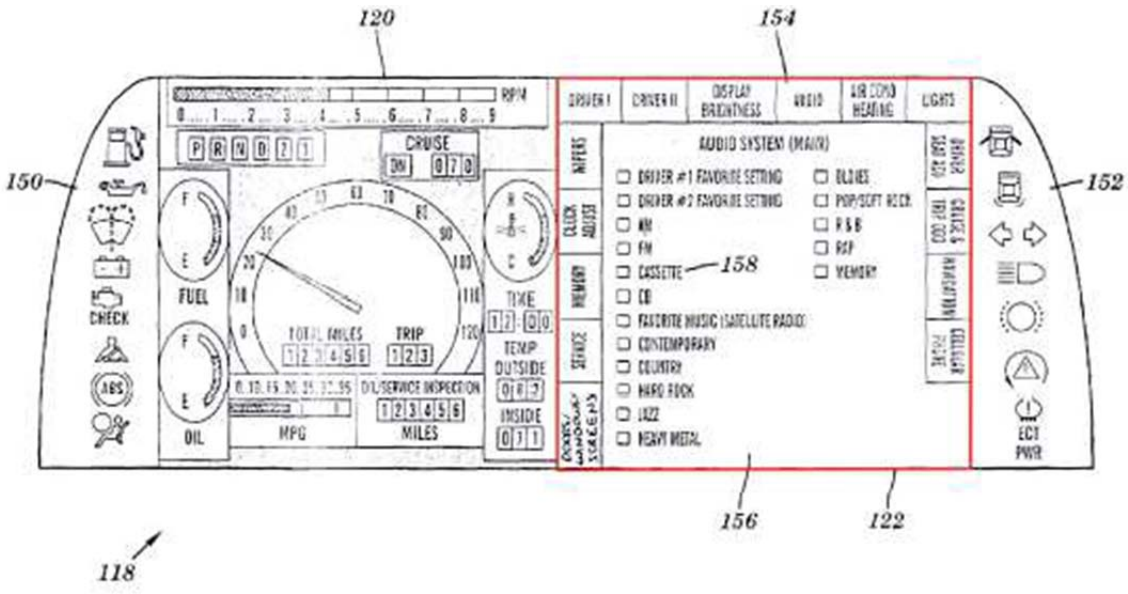
"In reviewing questions of claim construction," this Court "review[s] underlying factual determinations for clear error and ultimate determinations *de novo*." *Cadence Pharms., Inc. v. Exela PharmSci Inc.*, 780 F.3d 1364, 1368 (Fed. Cir. 2015) (*citing Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015)). "When 'the district court's construction relies only on intrinsic evidence,' this Court 'review[s] its construction *de novo.*'" *MobileMedia Ideas LLC v. Apple Inc.*, 780 F.3d 1159, 1180 (Fed. Cir. 2015) (*citing Teva*, 135 S. Ct. at 841).

"Anticipation is a question of fact. Anticipation may be resolved on summary judgment if there is no genuine issue of material fact. In reviewing summary judgment of invalidity for anticipation, we determine de novo whether

the evidence in the record raises a genuine issue of material fact." *Zenith Electronics Corp. v. PDI Commc'n Sys., Inc.*, 522 F.3d 1348, 1356-57 (Fed. Cir. 2008) (internal citations omitted). When summary judgment is sought, the moving party bears the burden of showing that there are no material facts in dispute, and all reasonable inferences must be resolved in the nonmovant's favor. *Rockwell Int'l Corp. v. United States*, 147 F.3d 1358, 1361-62 (Fed. Cir. 1998).

B. The District Court Misconstrued "Pages."

Claim 1 of the '677 Patent claims a "user interface system for a vehicle having a steering device," the user interface system having "a plurality of pages, wherein each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle," and a display "including a fixed area and a selectable area, wherein the fixed area displays vehicle information and the selectable area displays one of the plurality of pages, and wherein the fixed area and the selectable area each comprise a unique and static portion of the display," among other elements. Figure 2 of the '677 Patent shows page **156**, along with other aspects of the invention. A2968.



Page **156**, bounded in red, fills the entire selectable area **122**. *See* A2973 (4:47-49) ("Fixed area 120 displays vehicle information and **selectable area 122 displays a page** of parameters as discussed above.") (emphasis added); *see also* A2967 (Figure 1) and A2973 4:13-20) ("Selectable area **22 displays one of a plurality of pages** of information that are used to adjust parameters for the optional subsystems installed in vehicle **10**. Each page is configured to include one or more parameters for one or more optional subsystems installed in vehicle **10**. For example, a page may include various parameters for operating an audio system for vehicle **10**, and a second page may include various parameters for obtaining directions for a trip.") (emphasis added).

The district court adopted the construction proposed by JLRNA in its summary judgment reply brief: "a collection or section of information that can be

displayed on a screen at one time." A37. Neither "collection" nor "section" appears in the '677 Patent, and JLRNA did not offer any extrinsic evidence supporting their use in a construction of "pages." It is not clear what a "collection" or "section" is, how those terms are different, whether they are synonymous or in conflict with each other, or precisely how either "collection" or "section" modifies "information." Nor is it clear why the words "collection" and "section," neither of which appears in the '677 Patent, should find their way into a construction of the term "pages," a term which, in common parlance, is not associated with either word.

Regardless of what a "collection" or "section" might be, there is no basis for the district court's conclusion that "pages" as used in the '677 Patent is properly understood by reference to what "can be displayed on a screen at one time." A page is a page, not what "can be displayed on a screen at one time."

1. "Pages" Is Not Properly Defined By What "Can Be Displayed On A Screen At One Time".

JLRNA never explained why it is appropriate in the context of the '677 Patent to define "pages" by reference to what "can be displayed on a screen at one time," rather than by reference to what a page "is." The district court offered no explanation of its own for this approach.

The common meaning of a "page" is not what "can be displayed" on something, but rather what the page is. A "page" of a book, mentioned by JLRNA

in the reply brief in which it introduced its construction, is commonly understood to be "one side of a leaf of something printed or written, as a book, manuscript, or letter," *see* www.dictionary.reference.com (first definition of the noun "page"), rather than "a collection or section of information that can be displayed on one side of a leaf of something printed or written, as a book, manuscript, or letter." A page is where the story is written, not the story itself.

Neither JLRNA nor the district court cited anything in the '677 Patent or the prosecution history in support of the adoption of a construction referring to what can be displayed on a screen. Nor did JLRNA or the district court cite any extrinsic evidence providing a reason to adopt a concept of disembodied "information" as the core of the construction of "pages."

The disclosure of the '677 Patent is not consistent with the idea that "pages" are "collections" or "sections" of "information," rather than complete full screen images. Consistent with the common meaning of the term, when the '677 Patent mentions a page, it refers to what the Microsoft Computer Dictionary calls a "complete full screen image."

As already noted, page **156** is a part of Figure 2. A2968. There is nothing in the '677 Patent that provides a basis for calling each "section" of information on page **156** a "page," although any "section" on the page can be displayed on a screen (of some size) "at one time."

2. A "Collection" Of "Information" Is Not A "Page."

The '677 Patent provides no support for the idea that any "collection" of "information" that "can be displayed on a screen at one time" is a "page." A "page" is the image that appears on the screen, not any "collection of information" that "can be displayed on a screen at one time".

JLRNA's argument, and the district court's order, provided no guidance about how to determine whether "information" constitutes a "collection." Is any information a "collection?" If not, what does it take to establish a "collection?" How does a "collection" differ from "information?" How many "collections" are shown on the pages of the '677 Patent, each of which is said to constitute a single "page?" And if each page disclosed in the patent has but a single "collection," what is wrong with the idea that a "page" is a "complete full screen image," and what is there in the patent that justifies referring to what "can be displayed," rather than the image appearing on the page?

Under the district court's construction, a "collection" of information need not be displayed to be a "page." All that is required is that it be possible for the "collection" to be "displayed at one time on a screen" of undetermined size and shape. Thus, a word or sentence or paragraph in a novel becomes a "page" as that term is used in the '677 Patent. Any number is a "page," regardless of where it is

written, and, perhaps even as an abstract idea. That is not how "pages" is used in the '677 Patent.

"Collection" is further objectionable because it does not necessarily refer to "information" that is "collected" (or kept) together. For example, it may be that the various parameters used to operate a given subsystem might be said to constitute a "collection." The "collection" of subsystem parameters need not appear on the same "page." The specification explicitly discusses situations in which the "collection" of parameters used to operate a given subsystem will be split between different pages. A2974 (5:9-26). What is the "collection?" All of the parameters, as they appear on multiple pages? All of the parameters on a given page?

What happens if a "collection" can logically be divided? Do multiple "pages" result? How is it determined whether or when a "collection" might be divided for purposes of the district court's construction?

A "collection" of "information" is not a "page" under any common understanding of the term. Neither the district court nor JLRNA cited anything from the intrinsic record supporting a transformation of "pages" as used in the '677 Patent to a "collection" of "information."

3. The Reference To A "Section" Of Information Does Not Assist In Properly Defining "Pages."

The district court did not explain how, if at all, "section" and "collection" differ for purposes of its construction. The court did not explain whether every "section" is a "collection," whether the terms are synonymous, or why both terms are a necessary part of the construction. If a "collection" of information is sufficient, what is changed or added by including "section?"

How does one go about setting the boundaries of a "section?" If a "page" is a "section of information that can be displayed on a screen at one time," all "information" must be a "page," or multiple pages, because all information can be "sectioned," however inelegantly, so that it "can be displayed on a screen at one time." Does "section" have a "geographic" component, or is it simply another way of saying "collection?"

Under the district court's construction, page **156** in Figure 2 of the '677 Patent could contain a number of pages, even though the patent clearly portrays all of page **156** as one "page." *See* A2968. The district court concluded that a "section" of "information" is a "page." The district court did not explain what a "section" is, but page **156** appears to contain multiple "sections" of "information." The parameters **158** and the identifiers **154** could both be "sections," or each parameter and each identifier could be said to be, or to occupy, a separate "section." This would mean that page **156** of Figure 2

contains multiple pages, contrary to what the patent says. Indeed, although the patent clearly states that the pages it describes "include" subsystem "parameters," every such parameter could be a page under the district court's construction. So, too, could each of the rectangular identifiers that appear on the single page **156** set forth in Figure 2. A2968.

Page **156** in Figure 2 includes seventeen parameters for the audio subsystem it displays. A2968. Is each a "page" under the district court's construction, as a "section" or a "collection" of "information," even though the patent shows page **156** to be a single "page?" Are the areas devoted to selection of AM, FM, CD, and cassette, or the various musical genres, not separate "sections," and thus separate "pages" under the district court's construction?

There is further confirmation that the single "pages" depicted in the '677 Patent are not consistent with the Court's construction. The patent refers to "the page currently being displayed," not to "the *pages* currently being displayed," which would be the case if the district court were correct that a "page" is a "section of information." *See* A2973 (4:63-65). In Column 5, the '677 Patent refers to "a welcome page," A2974 at (5:11), plainly not a "section" of "information," and clearly the full image containing the "welcome." Page **156** of Figure 2 is the page "for operating and configuring an audio subsystem." *Id*. at (5:13-14). It "includes various parameters (i.e., AM, FM, Cassette, CD, etc.) for

operating features of the audio subsystem," in multiple "sections," but there is no doubt that it is one "page." *See also* A2973 (4:18-21) ("For example, a page may include various parameters for operating an audio system for vehicle **10**, and a second page may include various parameters for obtaining directions for a trip.").

The specification also explains that "[a]lternatively, selecting a parameter can present the user with a new page **156** that includes various additional parameters." A2974 (5:20-22). One new page, but "various additional parameters," and thus various "sections" of "information."

The patent also specifies that the selectable area **22** of Figure 1 "displays one of a plurality of pages that include at least one parameter for one or more optional subsystems installed in vehicle **10**." A2973 (3:31-33). *See also id*. at (4:13-15) ("Selectable area **22** displays one of a plurality of pages of information that are used to adjust parameters for the optional subsystems installed in vehicle **10**."). The entire selectable area **22** "displays **one** of a plurality of pages," not the multiple pages that would be present if the district court were correct that a "section of information" is a "page." The second display **28** of Figure 1 similarly "displays one of the plurality of pages." A2973 (3:42-43).

It is the full screen image **156** that is a page, and only a single page appears in the full screen displays **22** and **28**. Nothing in the patent provides any

support for the idea that a "section" of "information" is a "page" simply because it "can be displayed on a screen at one time".

II. VIT'S PROPOSED CONSTRUCTION OF "PAGES" SHOULD BE ADOPTED.

A. The Intrinsic Record Demonstrates That A Page Is "One Complete Full-Screen Image."

VIT's proposed construction was "one complete full-screen image, including formatting such as shapes, colors, and rotation of fonts." A34. VIT's construction does not present the problems resulting from an attempt to define "pages" by reference to what "can be displayed on a screen at one time", or by employing the concepts of "collections" or "sections" of "information" that do not appear in the patent and are not derived from any cited extrinsic evidence, without explaining what they mean and how they differ from each other.

"Complete full-screen image" is part of the definition of "page" in the 2002 Microsoft Computer Dictionary. When VIT presented the definition, there was no suggestion that the Microsoft Computer Dictionary is unreliable, or not worthy of consideration. Although a "complete full screen image" is comparable to "information that can be displayed on a screen at one time" (a concept with no identified source), the district court criticized VIT's technical dictionary as extrinsic evidence. A36. It is true that extrinsic evidence is "less significant than the intrinsic record," *Phillips*, 415 F.3d at 1317, but extrinsic evidence is not *per se*

improper, unjustifiable, or inherently unreliable. This Court has "authorized district courts to rely on extrinsic evidence," *id*., and recognized that dictionaries, especially technical dictionaries, are among the items of extrinsic evidence that are not only proper tools of claim construction, but potentially quite helpful.

> We have especially noted the help that technical dictionaries may provide to a court "to better understand the underlying technology" and the way in one of skill in the art might use the claim terms. Because dictionaries, and specifically technical dictionaries, endeavor to collect the accepted meanings of terms used in various fields of science and technology, those resources have been properly recognized as among the many tools that can assist the court in determining the meaning of particular terminology to those of skill in the art of the invention.

Id. (citations omitted). Post-*Phillips*, this Court has frequently relied on dictionaries and other types of extrinsic evidence, consistent with *Phillips*. *See, e.g., Starhome GmbH v. AT & T Mobility LLC*, 743 F.3d 849, 856 (Fed. Cir. 2014); *Parallel Networks, LLC v. Abercrombie & Fitch Co.*, 704 F.3d 958, 967 (Fed. Cir. 2013); *Meyer Intellectual Properties Ltd. v. Bodum, Inc.*, 690 F.3d 1354, 1369 (Fed. Cir. 2012); *Hynix Semiconductor Inc. v. Rambus Inc.*, 645 F.3d 1336, 1350 (Fed. Cir. 2011). So has the district judge responsible for this case. *See Immersion Corp. v. HTC Corp.*, 2015 WL 581572, at *3 (D. Del. Feb. 11, 2015) (finding "[p]laintiff's technical dictionary evidence to be very probative of how a person having ordinary skill in the art would have interpreted [the term] at the time

the patent was filed"); *Broadridge Fin. Solutions, Inc. v. Inveshare, Inc.*, 2012 WL 1245723, at *12-13 (D. Del. Apr. 11, 2012) (adopting a construction based on a technical dictionary definition consistent with the patent specification). The use of extrinsic evidence consistent with the specification is not inappropriate, and it was no answer to VIT's citation of the Microsoft Computer Dictionary that it is "extrinsic evidence."

There is nothing in the '677 Patent inconsistent with the idea that a "page" is a "complete full screen image." Every depiction of a page in the patent is consistent with this definition, and the district court and the defendants did not point to any contrary disclosure. The district court asserted that nothing in the patent requires that a "page" be a "complete full screen image," but that comment was not accompanied by an explanation. As explained above, whether it is page **156** in Figure 2, selectable area **22** in Figure 1, secondary display **28** in Figure 1, or any of the textual references in the patent, there is nothing demonstrating or suggesting that a page is not a "complete full-screen image." Any attempt to portray the "pages" of the '677 Patent as the information that appears on the pages, or as a "section" of information that appears on a page, is not consistent with the patent.

In one sense, the construction adopted by the district court points in the same direction as VIT's construction: "information" that "can be displayed on a screen at

one time" is, by definition, no more than that which can be a part of a "complete full-screen image." But the district court's construction presents the problems discussed above, and a focus on what "can" be displayed on a screen will inevitably lead to a result that is not consistent with the patent. For example, and as explained above, a construction that makes "a collection or section of information that can be displayed on a screen at one time" a "page" appears to make every word (or smaller grouping of data sufficient to constitute (a) "information" (b) that amounts to a "collection") a "page," as long as the "collection" "can be displayed" on "a screen" "at one time."

Construing a "page" to be "a complete full-screen image" also finds support in the background of the invention. The '677 Patent identifies a problem created by the introduction of new features in automobiles. A2972 (1:15-18). The specification explains that "there exists a need for user interface methods and systems that allow a driver to operate the various features while maintaining both hands on the steering device," and "a need for a user interface that allows a driver to easily locate desired information to reduce the time that his/her focus is away from the road." *Id*. at (1:47-52). VIT's proposed construction of "page" implements the "efficient display of information" and "allow[s] a driver to easily locate desired information."

Claim 1 of the '677 Patent provides that "each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle." A2975 (8:49-51). Figure 2 shows the "Audio System (Main)" subsystem information page **156**, A2968, including the page "identifiers," A2973 at (4:61-63), with page **156** clearly taking up the full screen of the selectable area. There is no "page" described or depicted anywhere in the patent that is anything other than "a complete full-screen image."

In order to permit a driver to "easily locate" the vehicle subsystem information and "efficient[ly] display" the information, a person of ordinary skill in the art would understand that the display must have certain characteristics consistent with the desired efficiency and ease of use. The purpose of the invention would not be served by the use of a "page" that was not a full-screen image, or was disorganized, or poorly or illogically designed.

Given the purpose of the invention of the '677 Patent, it is to be expected that the "pages" on which subsystem information is presented would take up the full screen of the selectable area, as shown in Figures 1 and 2, and present a useful unit of information about a selected vehicle subsystem. *See* A2967-68. It would not make sense consistently to use a series of partially-filled screens, or other random "collections" to display subsystem information. Using the "complete full screen" reduces distractions that might result in difficulty identifying the desired

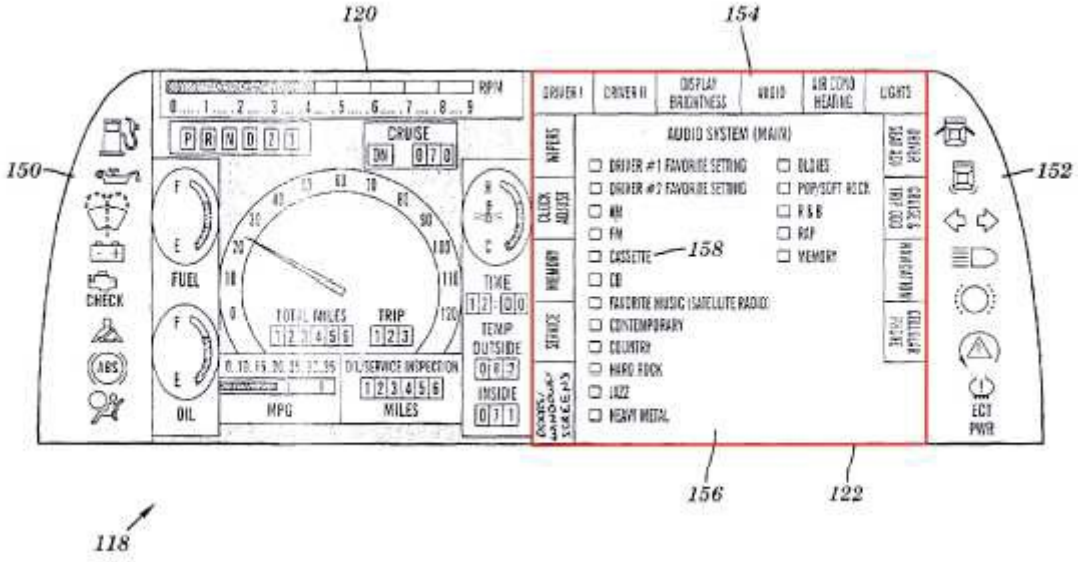
subsystem parameter, or cause the driver to spend an unsafe amount of time viewing the display.

B. There Is Ample Support in The Intrinsic Record For The Formatting That Plays A Role In VIT's Construction.

Consistent with the purpose of the invention, and supported by expert testimony, VIT also advocated the inclusion of a "formatting" requirement in its construction of "pages." VIT was criticized by JLRNA for including a formatting element on the basis that the discussion of formatting in the specification "relates to the ***identifier*** that represents the 'page,' not the 'page' itself." A490 (emphasis in original). JLRNA misunderstood the '677 Patent in this regard.

The attempt to disprove a formatting element on the basis of an argument that the identifiers **154** are formatted fails because the identifiers **154** are a part of the page **156**. *See* A2968. The identifiers **154** of Figure 2 can be used to select pages other than the displayed page. *Id*. These identifiers **154** are part of the displayed page **156**, and the specification explains that identifiers **154** will appear on any new page image that is displayed. *See* A2973 (4:66-67). The formatted "identifiers" are a part of the page **156**, not something different from the page. *See* A2968. There is thus no difference between "the identifier" and "the page," and no basis on which it can be said that formatting of the identifier is not formatting of the "page."

Figure 2 clearly shows page **156** to be coextensive with the selectable area **122**. *Id*. As shown in annotated Figure 2 below (which is reproduced from the brief filed by Ford in support of its motion for summary judgment), selectable area **122** shares the same boundary as page **156**.



A2054, A2968; *see also* A2973 (4:45-49) ("Display **118** includes a fixed area **120**, a selectable area **122**, and two warning areas **150**, **152**. Fixed area **120** displays vehicle information and selectable area **122** displays a page of parameters as discussed above.").

A view of the lower right corner of the page **156** and the rest of the right side of page **156** confirms that the identifiers **154** are part of the page **156**. The boundary of the page **156** is the same, regardless of whether there is an identifier at the rightmost edge of the page **156**.

Because the page **156** is coextensive with the selectable area **122**, and the identifiers **154** are displayed in the selectable area **122**, the identifiers **154** are part of the page **156**. *Id*. A person of ordinary skill in the art, and anyone else looking at Figure 2, would understand that the page **156** includes the formatting associated with the page identifiers. A2973 (4:63-66) ("The identifier that represents the page currently being displayed can be highlighted (i.e., a unique color, bold, designated location, reverse colors, etc.)."). In other words, the page **156** includes what JLRNA agrees is formatting, and it is not possible to dismiss VIT's formatting argument with an argument that only the identifiers are formatted. The identifiers are every bit as much a part of the page as any other part of the page.

Not surprisingly, given the nature and purpose of the invention, the subsystem parameters share the formatting of the identifiers. A2974 (6:37-38) ("Similar to the identifiers discussed above, the selected parameter can be highlighted on the page.").

The idea of requiring formatting for a page is supported by other parts of the intrinsic record. As discussed above, the '677 Patent seeks to provide a safer, more efficient vehicle display to minimize the time a driver's eyes are away from the road or his or her hands are off the steering wheel. A2972 (1:47-52, 15-18). An efficient display of vehicle information requires organization. This organization can take different forms, but VIT's inclusion of a "formatting" limitation is

consistent with the formatting of the identifiers and the parameters, and having an organized and efficient display of information and improving the driver's ability easily to locate the parameters he or she must select.

III. THE RECORD DOES NOT SUPPORT A FINDING OF ANTICIPATION.

Based on the claim construction pursuant to which "pages" are present as long as there is "a collection or section of information that can be displayed on a screen at one time," and VIT's concession that adoption of that construction would resolve the case, the district court found the '677 Patent anticipated by a 2001 Mercedes Benz automobile. A38.

The court's construction made it unnecessary to determine whether the selectable area of the 2001 Mercedes Benz contained a "complete full screen image," or a "screen," to consider the formatting of the selectable area, or to evaluate the composition of the selectable area in any meaningful way. The court's construction reduced the inquiry to the question of whether "information" that could be considered a "collection" or "section" and displayed on a screen at one time was present.

With no findings on any of the issues relevant under a proper construction, VIT submits that a remand is required so the district court may determine whether, under a proper claim construction, JLRNA can meet its burden of proving by clear

and convincing evidence that the Mercedes Benz reference discloses the required "page."

IV. CONCLUSION.

For the foregoing reasons, the district court's judgment should be reversed and the case remanded for consideration of JLRNA's motion under a proper claim construction.

Dated: September 14, 2015 FREITAS ANGELL & WEINBERG LLP

/s/Robert E. Freitas
Robert E. Freitas

CERTIFICATE OF SERVICE

It is certified that copies of the foregoing has been served via electronic transmission to the persons at the address below:

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/s/Robert E. Freitas
Robert E. Freitas

CERTIFICATE OF COMPLIANCE

Pursuant to Federal Rule of Appellate Procedure 32(a)(7)(C), I certify that the Appellant's Opening Brief is proportionally spaced, in a typeface of 14 points or more and contains 36,468 words, exclusive of those materials not required to be counted under Rule 32(a)(7)(B)(iii).

/s/Robert E. Freitas
Robert E. Freitas

ADDENDUM

Joint [Proposed] Final Judgment

Order Re Motions for Summary Judgment

Memorandum Opinion

U.S. Patent 6,842,677 B2

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

VEHICLE INTERFACE TECHNOLOGIES, LLC, Plaintiff, v. JAGUAR LAND ROVER NORTH AMERICA, LLC, Defendant.	C.A. No. 12-1285-RGA

FINAL JUDGMENT

The Court, by Order dated January 21, 2015 granted Defendant Jaguar Land Rover North America LLC's ("JLRNA") Motion for Summary Judgment of Invalidity of U.S. Patent No. 6,842,677. The Asserted Claims (claims 1, 2, 3, 5 and 6) of U.S. Patent No. 6,842,677 ("the '677 patent") are invalid under 35 U.S.C. § 102. The Court has not adjudicated any other issue that was raised in Vehicle Interface Technologies, LLC's ("VIT's") Complaint (D.I. 1) or JLRNA's Answer (D.I. 7), including without limitation the issues of non-infringement, invalidity based on 35 U.S.C. §§ 101, 103, and/or 112, or the claim construction issue referenced in the Court's June 3, 2015 Order (D.I. 124).

IT IS HEREBY ORDERED AND ADJUDGED:

1. Judgment of invalidity of each asserted claim, i.e., claims 1, 2, 3, 5 and 6, of the '677 patent is entered in favor of JLRNA and against VIT; and

2. VIT shall take nothing.

This is a final judgment and may be appealed.

SO ORDERED this 25 day of June, 2015

Hon. Richard G. Andrews
United States District Judge

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

VEHICLE INTERFACE TECHNOLOGIES, LLC, Plaintiff, v. FORD MOTOR COMPANY, Defendant.	Civil Action No. 12-1284-RGA
VEHICLE INTERFACE TECHNOLOGIES, LLC, Plaintiff, v. JAGUAR LAND ROVER NORTH AMERICA, LLC, Defendant.	Civil Action No. 12-1285-RGA

ORDER

The Court having considered Defendants' Motions for Summary Judgment (C.A. No. 12-1284, D.I. 85 & C.A. No. 12-1285, D.I. 88), as well as the papers filed in connection therewith;

IT IS HEREBY ORDERED that Defendants' Motions for Summary Judgment are **GRANTED** with respect to anticipation.

Entered this 21st day of January, 2015.

Richard G. Andrews
United States District Judge

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

VEHICLE INTERFACE TECHNOLOGIES, LLC, Plaintiff, v. FORD MOTOR COMPANY, Defendant.	Civil Action No. 12-1284-RGA
VEHICLE INTERFACE TECHNOLOGIES, LLC, Plaintiff, v. JAGUAR LAND ROVER NORTH AMERICA, LLC, Defendant.	Civil Action No. 12-1285-RGA

MEMORANDUM OPINION

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January 21, 2015

ANDREWS, U.S. DISTRICT JUDGE:

Presently before the Court are Defendants' Motions for Summary Judgment based on anticipation. (D.I. 88).[1] The motions have been fully briefed (D.I. 89, 96 & 100), and the parties appeared for oral argument on December 22, 2014 (D.I. 110). During oral argument, Defendants informed the Court that they had joined each other's motions, and thus presented their arguments together. (*Id.* at 5:16–18). For the reasons set forth herein, Defendants' Motions for Summary Judgment, with respect to anticipation, are granted.[2]

I. BACKGROUND

Plaintiff Vehicle Interface Technologies, LLC ("VIT") brought the current action against Defendants Ford Motor Company and Jaguar Land Rover North America, LLC for patent infringement on October 5, 2012. (D.I. 1). VIT is the owner of U.S. Patent No. 6,842,677 ("the '677 patent"), and alleges that Defendants' products and services infringe that patent. The summary of the invention states that:

> The invention provides user interface systems and methods for a vehicle. A display is provided to a driver that includes a fixed area and a selectable area. The fixed area displays vehicle information such as speed, gas level, mileage, etc. The selectable area displays a page that includes parameters for one or more optional subsystems. The desired page can be selected by the driver using a first set of input devices mounted on a side of the steering device (i.e., steering wheel) of the vehicle.

(D.I. 90, Ex. A at 8, 1:57–65). VIT asserts independent claim 1, and dependent claims 2, 3, 5, and 6 of the '677 patent. (D.I. 89 at 8). Claim 1 of the '677 patent provides:

> A user interface system for a vehicle having a steering device, the system comprising:

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1 Unless specifically noted otherwise, all citations to the record are to Civil Action No. 12-1285.

2 This opinion does not address Defendants' obviousness or non-infringement arguments.

> a plurality of pages, wherein each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle;
>
> a display mounted behind the steering device, the display including a fixed area and a selectable area, wherein the fixed area displays vehicle information and the selectable area displays one of the plurality of pages, and wherein the fixed area and the selectable area each comprise a unique and static portion of the display; and
>
> a computing system in communication with the display device, wherein the computing system operates each of the plurality of optional subsystems based on the at least one parameter.

(D.I. 90, Ex. A at 11, 8:47–61). The Court issued a claim construction opinion, construing the term "wherein the fixed area and the selectable area each comprise a unique and static portion of the display" to mean "wherein the fixed area and the selectable area have non-overlapping and non-moving boundaries and the fixed area does not display any of the plurality of pages." (D.I. 53 at 5).

Defendants rely on multiple prior art references for their anticipation argument, but I will focus on the 2001 Mercedes-Benz E-Class ("2001 Mercedes"). Defendants allege that the 2001 Mercedes was offered for sale, sold, and used as early as February 28, 2001 (D.I. 90, Ex. FF ¶ 15), and that the user manual was published on October 31, 2000 (*Id.*, Ex. M). The filing date of the '677 patent was February 28, 2003. (*Id.*, Ex. A at 2). VIT does not dispute that the 2001 Mercedes constitutes a prior art reference. (D.I. 110 at 6:14–18).

II. LEGAL STANDARD

"The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). The moving party has the initial burden of proving the absence of a genuinely disputed material fact relative to the claims in question. *Celotex Corp. v. Catrett*, 477 U.S. 317,

330 (1986). Material facts are those "that could affect the outcome" of the proceeding, and "a dispute about a material fact is 'genuine' if the evidence is sufficient to permit a reasonable jury to return a verdict for the nonmoving party." *Lamont v. New Jersey*, 637 F.3d 177, 181 (3d Cir. 2011) (quoting *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)). The burden on the moving party may be discharged by pointing out to the district court that there is an absence of evidence supporting the non-moving party's case. *Celotex*, 477 U.S. at 323.

The burden then shifts to the non-movant to demonstrate the existence of a genuine issue for trial. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586–87 (1986); *Williams v. Borough of West Chester, Pa.*, 891 F.2d 458, 460–61 (3d Cir. 1989). A non-moving party asserting that a fact is genuinely disputed must support such an assertion by: "(A) citing to particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or other materials; or (B) showing that the materials cited [by the opposing party] do not establish the absence . . . of a genuine dispute . . . ." Fed. R. Civ. P. 56(c)(1).

When determining whether a genuine issue of material fact exists, the court must view the evidence in the light most favorable to the non-moving party and draw all reasonable inferences in that party's favor. *Scott v. Harris*, 550 U.S. 372, 380 (2007); *Wishkin v. Potter*, 476 F.3d 180, 184 (3d Cir. 2007). A dispute is "genuine" only if the evidence is such that a reasonable jury could return a verdict for the non-moving party. *Anderson*, 477 U.S. at 247–49. If the non-moving party fails to make a sufficient showing on an essential element of its case with respect to which it has the burden of proof, the moving party is entitled to judgment as a matter of law. *See Celotex Corp.*, 477 U.S. at 322.

III. DISCUSSION

During oral argument, the parties agreed that the construction of the term "page" is the only matter at issue for determining whether the 2001 Mercedes prior art reference anticipates all of the asserted claims in the '677 patent. (D.I. 110 at 6:14–18). VIT conceded that if the Court agrees with Defendants' construction of "page," then the '677 patent is anticipated by the 2001 Mercedes. (*Id.* at 7:7–22). Therefore, the Court will focus its attention on the construction of the term "page" before addressing anticipation.

A. Claim Construction

1. Legal Standard

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). "'[T]here is no magic formula or catechism for conducting claim construction.' Instead, the court is free to attach the appropriate weight to appropriate sources 'in light of the statutes and policies that inform patent law.'" *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324). When construing patent claims, a matter of law, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, "the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (internal quotation marks and citations omitted).

"[T]he words of a claim are generally given their ordinary and customary meaning. . . . [Which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13 (internal quotation marks and citations omitted). "[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314 (internal citations omitted).

A court may consider extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises," in order to assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* at 1317–19 (internal quotation marks and citations omitted). Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

"A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GmbH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (internal quotation marks and citation omitted).

2. Disputed Term

"page"

a. *Plaintiff's proposed construction*: One complete full-screen image, including formatting such as shapes, colors, and rotation of fonts. (D.I. 110 at 48:6–7).

b. *Defendants' proposed construction*: A collection or section of information that can be displayed on a screen at one time. (D.I. 100 at 6).

c. *Court's construction*: A collection or section of information that can be displayed on a screen at one time.

Defendants argue that claim 1 of the '677 patent only requires a "page" to include "at least one parameter for at least one of a plurality of optional subsystems for the vehicle." (D.I. 90, Ex. A at 11, 8:47–61). Defendants cite element 156 of Figure 2 and element 128 of Figure 4 as illustrative examples of a "page" in the '677 patent:

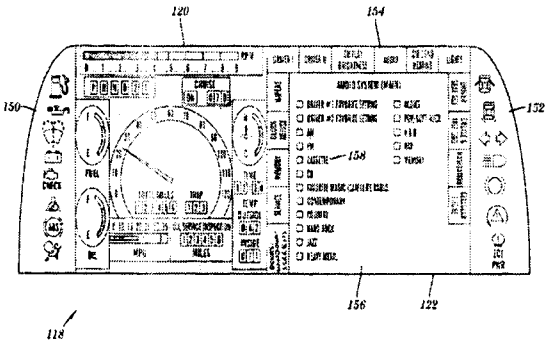


FIG. 2

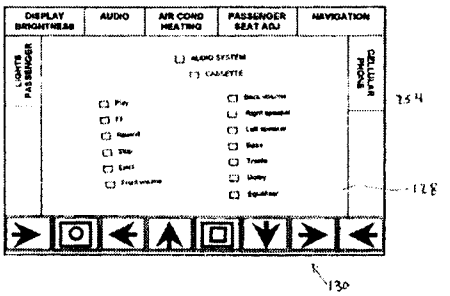


FIG. 4

(*Id.* at 4 fig.2 & 6 fig.4). The specification provides that "[p]age 156 includes various parameters (i.e., AM, FM, Cassette, CD, etc.) for operating features of the audio subsystem," and "[f]or example, a user can select the cassette parameter 158 and page 156 would change to the page that contains the various parameters for operating a cassette player (shown displayed in secondary display 128 in FIG. 4)." (*Id.* at 10, 5:15–17 & 5:23–27). Defendants maintain that

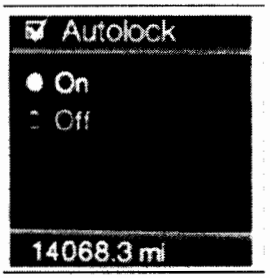
"nothing in the '677 Patent or its prosecution history suggests that 'pages' require certain appearance characteristics, such as shapes, colors or graphics." (D.I. 89 at 12). Defendants argue that VIT's expert, Michael Nranian, would require a "page" to be "appealing" and "aesthetically pleasing," which are both subjective standards that are not supported by the intrinsic record. (D.I. 90, Ex. G at 12, 318:20–22). Defendants contend that the plain and ordinary meaning of the term "page" may include text, shapes, or graphics, but may also include text only, as is the case in the page of a book. (D.I. 89 at 12).

VIT relies almost entirely on the Microsoft Computer Dictionary and Mr. Nranian's testimony to support its proposed construction. (D.I. 110 at 46:13–20). Mr. Nranian states in his report that "[a] 'page' has appearance characteristics such as shapes, color gradients, graphical details, etc. to make selectable features more distinct, readable, and sharper," and "as it would be understood as of 2002, requires more in terms of detail, formatting, etc. than the mere 1-4 lines of basic text provided in the message center of the Mercedes Benz E-Class." (D.I. 90, Ex. D ¶¶ 73 & 94). VIT cites the '677 specification for support, which provides that "[t]he identifiers that represent the page currently being displayed can be highlighted (*i.e.*, a unique color, bold, designated location, reverse colors, etc.)." (*Id.*, Ex. A at 9, 4:63–66). Additionally, VIT argues that element 156 of Figure 2 "contains formatting, consisting of numerous rows of selectable options, multiple fonts (normal and rotated 90 degrees each way) and is associated with the tree of formatted menus surrounding the display." (D.I. 96 at 11).

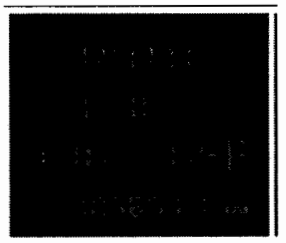
VIT admits that its proposed construction goes beyond the plain and ordinary meaning of the term "page." (D.I. 110 at 49:1–7). There is nothing in the claims or the specification that requires a "page" to be a "complete full-screen image," or to have a certain degree of "formatting." The specification passage that VIT cites for support only refers to page

"identifiers," not a "page," and provides exemplary embodiments, which do not create limitations for the claim terms. Mr. Nranian's testimony and the Microsoft Computer Dictionary are both sources of extrinsic evidence, which the Federal Circuit has said is "less significant than the intrinsic record." *Phillips*, 415 F.3d at 1317. Further, the Federal Circuit has made clear that "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court." *Id.* at 1318.

A side-by-side comparison of the accused Ford product and the Lincoln prior art reference highlights the contradiction between what VIT considers a "page" for purposes of infringement, and what it does not consider a "page" for purposes of invalidity:



[Accused Ford Product]



[Lincoln Prior Art]

(D.I. 89 at 16; *see also* C.A. No. 12-1284, D.I. 91, Ex. C at 55). It is a well-established principle that "claims are construed the same way for both invalidity and infringement." *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003). Here, the only difference between the two images above is the relative "attractiveness" of the display screens. No construction of the term "page" can incorporate such a fine distinction, so as to include the "page" in the accused Ford product, and exclude the "page" in the Lincoln prior art reference. Therefore, the claims of the '677 patent could not reasonably be found to be both valid and infringed when applying a single construction of the term "page."

I agree with Defendants that VIT's limitation requiring "formatting" is not supported by the intrinsic record, and is based solely on Mr. Nranian's "unsupported assertions." In my opinion, VIT's proposal is not even close to being a proper claim construction. Defendants' proposed construction, on the other hand, is consistent with the broad definition of "page" in claim 1 of the '677 patent, requiring only the inclusion of "at least one parameter for at least one of a plurality of optional subsystems for the vehicle." Further, Defendants' proposed construction matches the examples provided in Figures 2 and 4 of the '677 patent, which are "section[s] of information" that are "displayed on a screen at one time." Thus, Defendants' proposed construction better represents the plain and ordinary meaning of the term "page," as understood in the '677 patent. Therefore, I adopt Defendants' proposed construction.

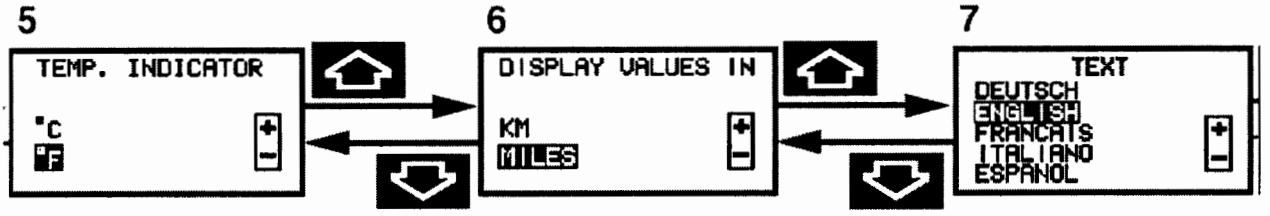
B. Anticipation

1. Legal Standard

"To show that a patent claim is invalid as anticipated, the accused infringer must show by clear and convincing evidence that a single prior art reference discloses each and every element of a claimed invention." *Silicon Graphics, Inc. v. ATI Tech., Inc.*, 607 F.3d 784, 796 (Fed. Cir. 2010). "[E]very element of the claimed invention [must be described], either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation." *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1346 (Fed. Cir. 2009). As with infringement, the court construes the claims and compares them against the prior art. *See Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010). "While anticipation is a question of fact, it may be decided on summary judgment if the record reveals no genuine dispute of material fact." *Encyclopaedia Britannica, Inc. v. Alpine Elecs. of Am., Inc.*, 609 F.3d 1345, 1349 (Fed. Cir. 2010).

2. 2001 Mercedes

Defendants argue that the 2001 Mercedes reference anticipates all of the asserted claims in the '677 patent. (D.I. 89 at 10). Defendants' expert Dr. Paul Green sets forth in his expert report each element in the asserted claims of the '677 patent, and where it is found in the 2001 Mercedes. (D.I. 90, Ex. FF ¶¶ 32–71). VIT's expert, Mr. Nranian, only contests Defendants' proof of anticipation on the basis that the 2001 Mercedes does not disclose "page." (*Id.*, Ex. D ¶¶ 91–98). During oral argument, VIT agreed that construing the term "page" was the only remaining issue to determine whether the 2001 Mercedes anticipates the asserted claims of the '677 patent. (D.I. 110 at 6:14–18). Further, VIT agreed that if the Court adopts Defendants' construction of "page," then the 2001 Mercedes anticipates the asserted claims of the '677 patent. (*Id.* at 7:15–22). The Court has construed "page" to mean "a collection or section of information that can be displayed on a screen at one time." Applying the Court's construction, the 2001 Mercedes contains the following menus for optional subsystems, which meet the Court's definition of "page":



(D.I. 90, Ex. M at p. A0199). Therefore, there is no genuine issue of material fact with regard to anticipation, and the Court finds that all of the asserted claims in the '677 patent are anticipated by the 2001 Mercedes.

IV. CONCLUSION

For the reasons set forth above, the Court will grant Defendants' Motions for Summary Judgment on the basis of anticipation. A separate Order consistent with this Memorandum Opinion will be entered.

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(12) **United States Patent**
Pathare

(10) **Patent No.: US 6,842,677 B2**
(45) **Date of Patent: Jan. 11, 2005**

(54) **VEHICLE USER INTERFACE SYSTEM AND METHOD**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(22) Filed: **Feb. 28, 2003**

(65) **Prior Publication Data**

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(51) **Int. Cl.**[7] **G06F 7/00**
(52) **U.S. Cl.** **701/36**; 701/33; 701/41; 340/995.27
(58) **Field of Search** 701/1, 33, 36, 701/41, 211; 340/995.16, 995.17, 995.27

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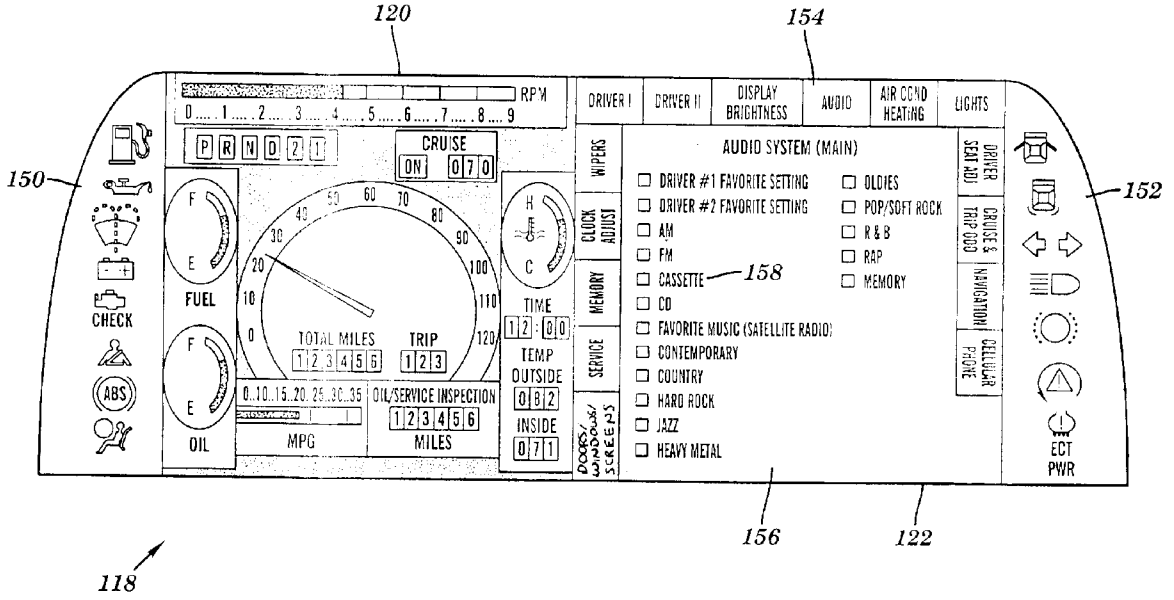
(74) *Attorney, Agent, or Firm*—John W. LaBatt; Hoffman, Warnick & D'Alessandro LLC

(57) **ABSTRACT**

The invention provides a user interface for a vehicle. A display is configured to include a fixed area and a selectable area. The fixed area displays vehicle information, while the selectable area displays one of a plurality of pages that includes parameters for at least one of a plurality of optional subsystems for the vehicle. A steering device for the vehicle can include a first and second set of input devices mounted on opposing sides of the steering device. The first set of input devices select one of the plurality of pages to display in the selectable area. The second set of input devices adjust parameters on the selected page.

21 Claims, 5 Drawing Sheets



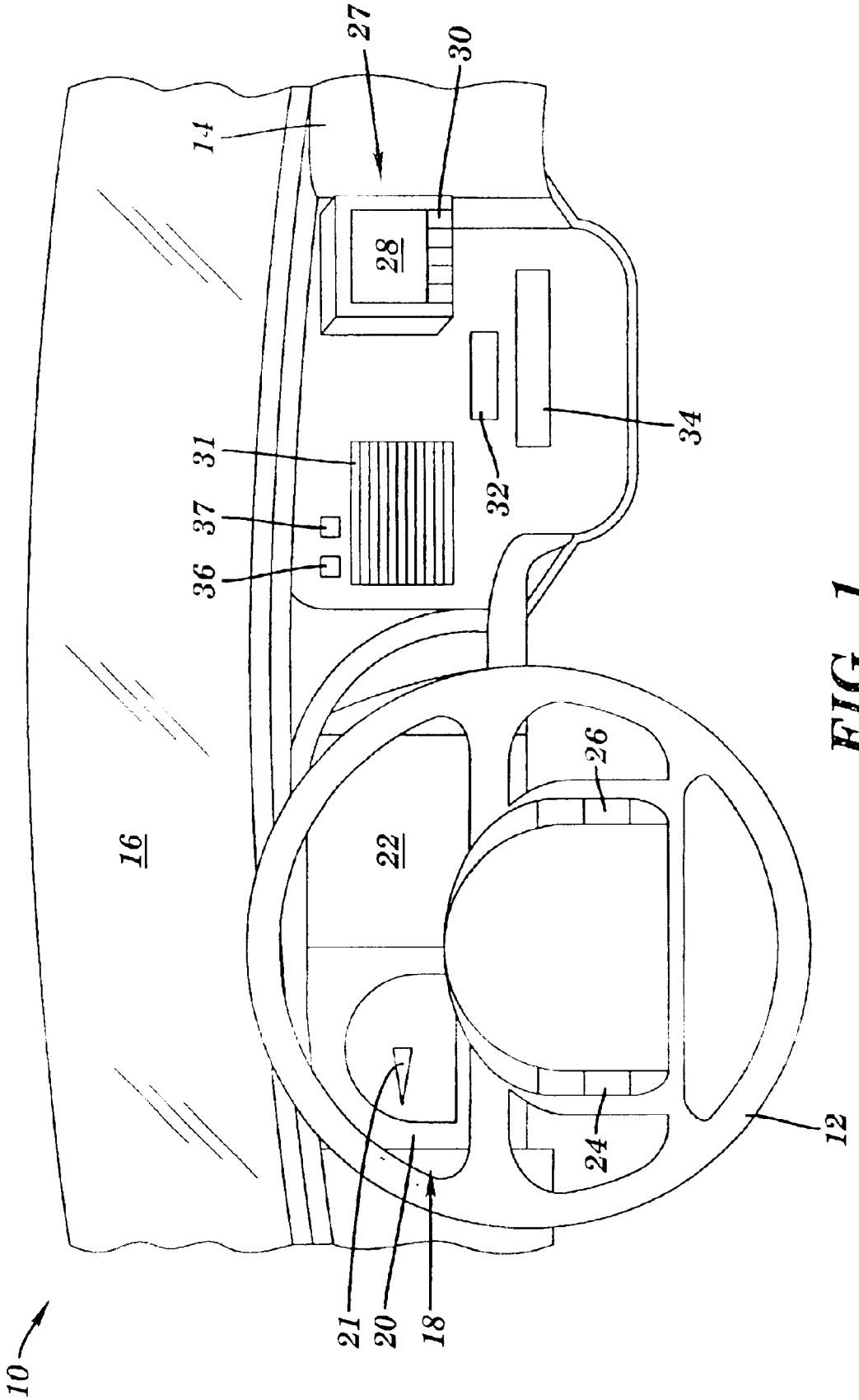


FIG. 1

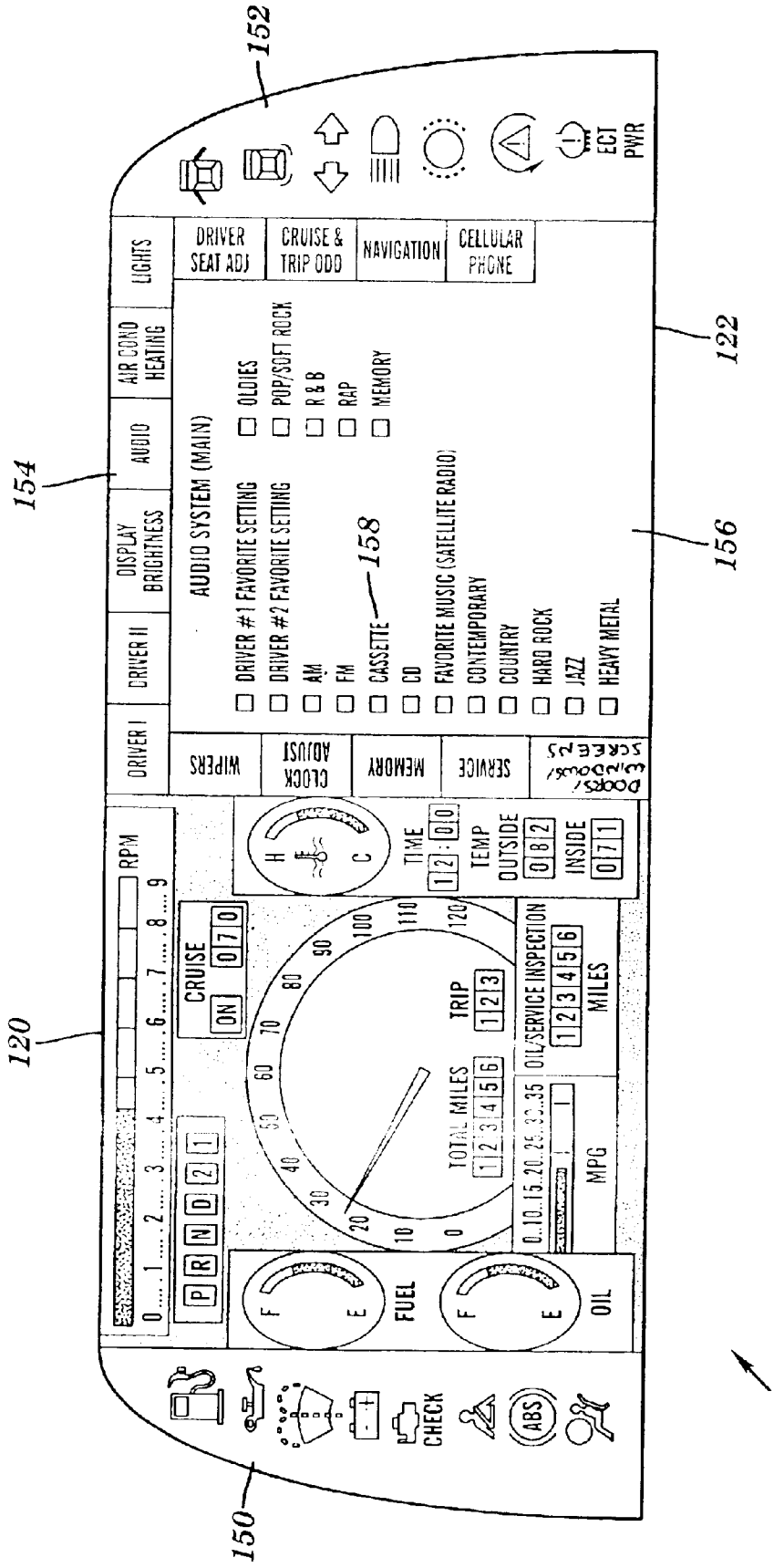

152
154
120
150
118
122
156
158
LIGHTS
AIR COND HEATING
AUDIO
DISPLAY BRIGHTNESS
DRIVER II
DRIVER I
DRIVER SEAT ADJ
CRUISE & TRIP ODO
NAVIGATION
CELLULAR PHONE
AUDIO SYSTEM (MAIN)
DRIVER #1 FAVORITE SETTING
DRIVER #2 FAVORITE SETTING
AM
FM
CASSETTE
CD
OLDIES
POP/SOFT ROCK
R & B
RAP
MEMORY
FAVORITE MUSIC (SATELLITE RADIO)
CONTEMPORARY
COUNTRY
HARD ROCK
JAZZ
HEAVY METAL
WIPERS
CLOCK ADJUST
MEMORY
SERVICE
RPM
CRUISE
ON
TIME
TEMP
OUTSIDE
INSIDE
TRIP
TOTAL MILES
OIL/SERVICE INSPECTION
MILES
MPG
FUEL
OIL
CHECK
ABS
ECT PWR

FIG. 2

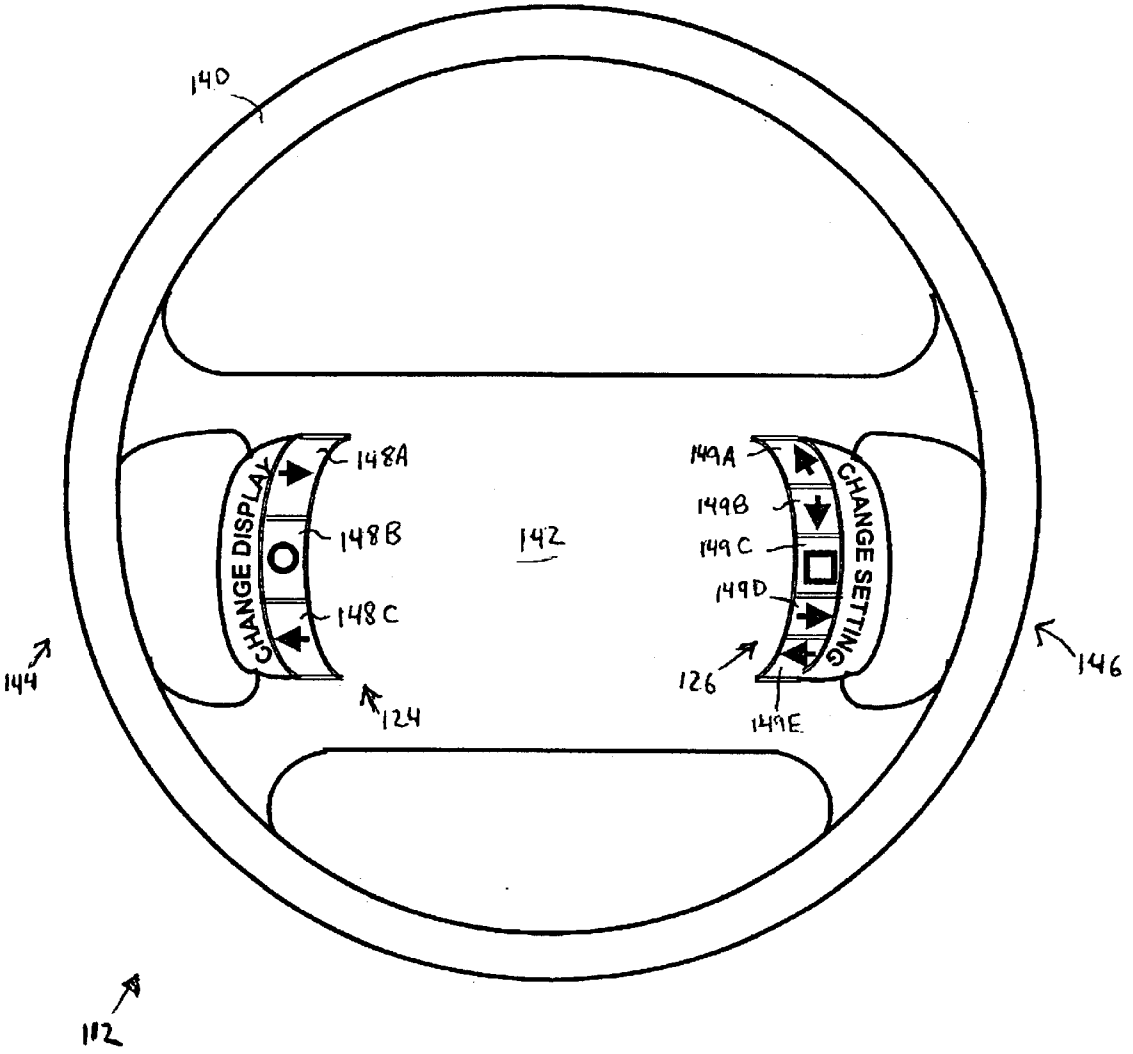

140
CHANGE DISPLAY
148A
148B
148C
142
124
149A
149B
149C
149D
CHANGE SETTING
126
149E
144
146
112

FIG.3

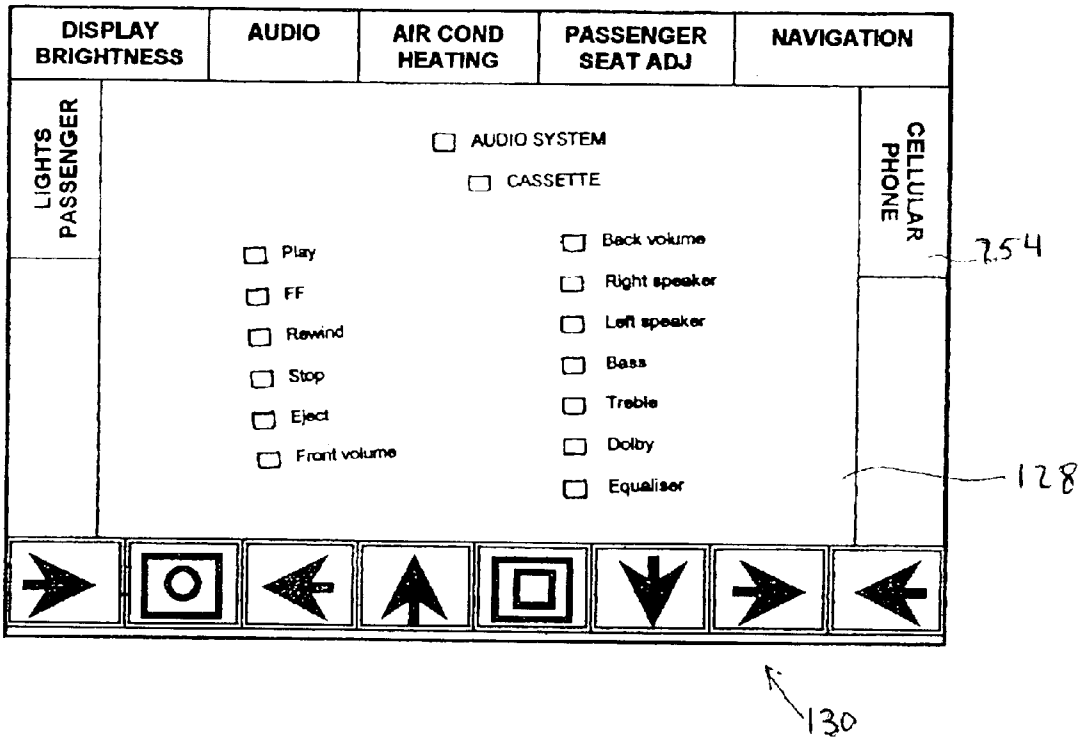
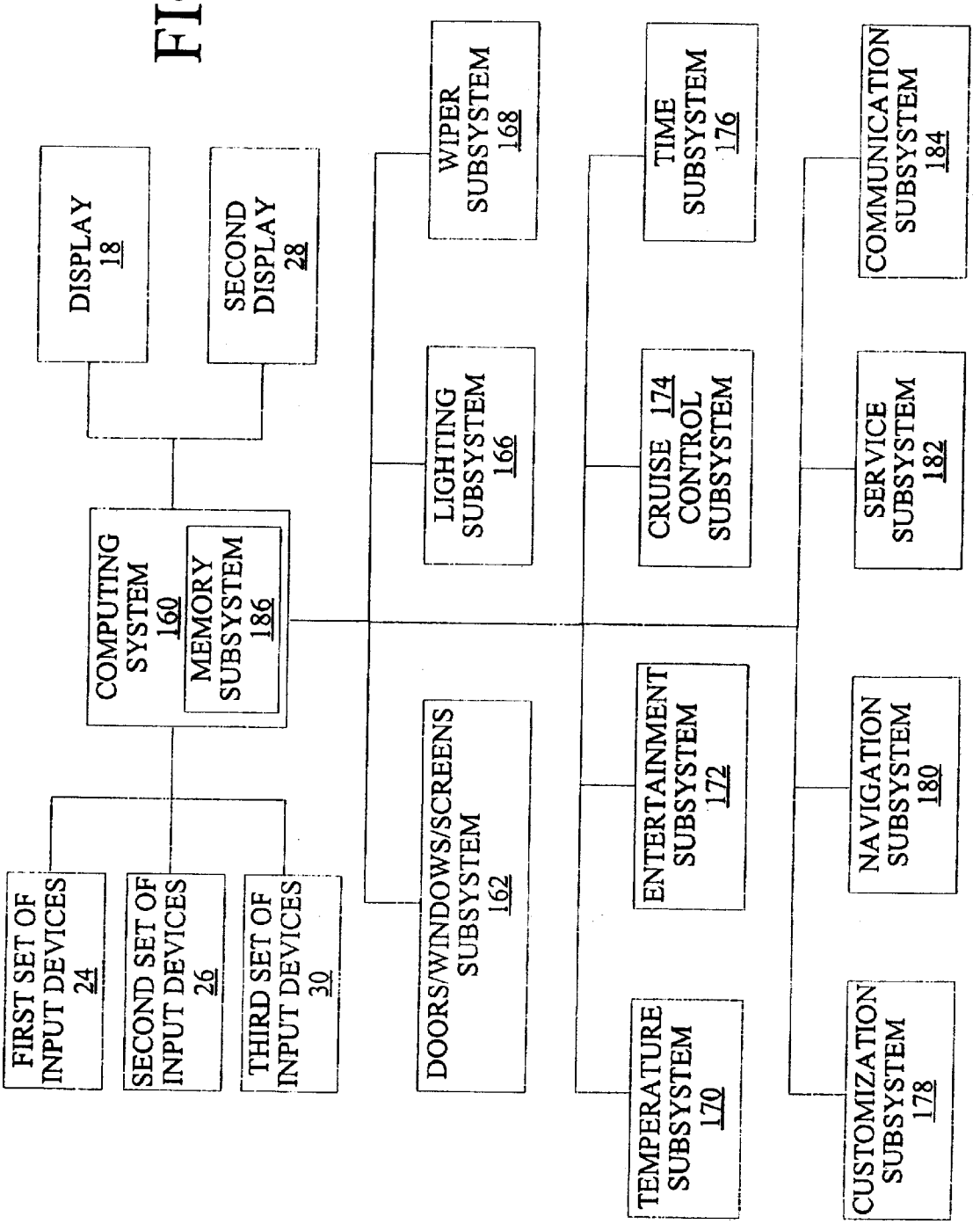

DISPLAY BRIGHTNESS
AUDIO
AIR COND HEATING
PASSENGER SEAT ADJ
NAVIGATION
LIGHTS PASSENGER
CELLULAR PHONE
AUDIO SYSTEM
CASSETTE
Play
FF
Rewind
Stop
Eject
Front volume
Back volume
Right speaker
Left speaker
Bass
Treble
Dolby
Equaliser
154
128
130
127

FIG. 4

FIG. 5


DISPLAY 18
SECOND DISPLAY 28
COMPUTING SYSTEM 160
MEMORY SUBSYSTEM 186
FIRST SET OF INPUT DEVICES 24
SECOND SET OF INPUT DEVICES 26
THIRD SET OF INPUT DEVICES 30
WIPER SUBSYSTEM 168
LIGHTING SUBSYSTEM 166
DOORS/WINDOWS/SCREENS SUBSYSTEM 162
TIME SUBSYSTEM 176
CRUISE CONTROL SUBSYSTEM 174
ENTERTAINMENT SUBSYSTEM 172
TEMPERATURE SUBSYSTEM 170
COMMUNICATION SUBSYSTEM 184
SERVICE SUBSYSTEM 182
NAVIGATION SUBSYSTEM 180
CUSTOMIZATION SUBSYSTEM 178

VEHICLE USER INTERFACE SYSTEM AND METHOD

BACKGROUND OF THE INVENTION

1. Technical Field

The invention relates to vehicle user interfaces. In particular, the invention provides vehicle user interface systems and methods that allow a driver to view and control a plurality of subsystems using a display having a fixed area and a selectable area and/or input devices located on a steering device for the vehicle.

2. Background Art

In recent years, an increasing number of features have been included in vehicles. As more features are included, the efficient display of information and operation of the various features becomes an increasingly difficult problem. Generally, each feature should be operable by the driver of the vehicle since he/she is often the only individual in the vehicle. However, a driver's primary concern is the operation of the vehicle on a road. Consequently, it is desirable that a user interface for operating the various features require a minimal amount of distraction for the driver. Further, as the number of features increases, the amount of space available to display information and place input devices has remained substantially the same. As a result, the interior of the vehicle has become increasingly cluttered with various input/output devices for the numerous features. Consequently, it is desirable to reduce the space allocated for displaying information and operating the features.

Previous solutions to the space/user interface problem have suggested altering the size and/or location of the displayed information. Some solutions have included input devices hanging from the roof, mounted on the interior of doors, on a center panel, on the dashboard, and/or on the steering wheel. These solutions generally require that certain functions be performed by using one or more input devices located away from the steering wheel of the vehicle. Further, by changing the location and/or size of the information displayed, these solutions require additional visual searching by a driver to locate the desired information in the vehicle. Thus, in each of the previous solutions, the driver must remove a hand from the steering wheel and/or divert focus from the road in order to perform one or more the operations.

As a result, there exists a need for user interface methods and systems that allow a driver to operate the various features while maintaining both hands on the steering device. Further, there exists a need for a user interface that allows a driver to easily locate desired information to reduce the time that his/her focus is away from the road. Still further, there exists a need to maintain an aesthetically pleasing vehicle interior while providing various features.

SUMMARY OF THE INVENTION

The invention provides user interface systems and methods for a vehicle. A display is provided to a driver that includes a fixed area and a selectable area. The fixed area displays vehicle information such as speed, gas level, mileage, etc. The selectable area displays a page that includes parameters for one or more optional subsystems. The desired page can be selected by the driver using a first set of input devices mounted on a side of the steering device (i.e., steering wheel) of the vehicle. Parameters displayed on the selected page can be selected and adjusted using a second set of input devices mounted on an opposing side of the steering device. A second display and/or a third set of input devices can also be provided to allow a passenger in the vehicle to view and/or select one of the pages and adjust one or more of the displayed parameters.

A first aspect of the invention provides a user interface system for a vehicle having a steering device, the system comprising: a plurality of pages, wherein each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle; a display mounted behind the steering device, the display including a fixed area and a selectable area, wherein the fixed area displays vehicle information and the selectable area displays one of the plurality of pages; and a computing system in communication with the display device, wherein the computing system operates each of the plurality of optional subsystems based on the at least one parameter.

A second aspect of the invention provides a user interface system for a vehicle having a steering device, the system comprising: a plurality of pages, wherein each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle; a display including a fixed area and a selectable area, wherein the fixed area displays vehicle information and the selectable area displays one of the plurality of pages; a first set of input devices that select one of the plurality of pages to display in the selectable area; and a second set of input devices that adjust the at least one parameter on the selected page; wherein the first set of input devices and the second set of input devices are mounted on opposing sides of the steering device.

A third aspect of the invention provides a method of operating a plurality of optional subsystems for a vehicle having a steering device, the method comprising: displaying vehicle information in a fixed area of a display; displaying one of a plurality of pages in a selectable area of the display, wherein each page includes at least one parameter for at least one of the plurality of optional subsystems; selecting a page to display in the selectable area using a first set of input devices mounted on a first side of the steering device; and adjusting the at least one parameter on the selected page using a second set of input devices mounted on a second side of the steering device.

The illustrative aspects of the invention are designed to solve the problems herein described and other problems not discussed, which are discoverable by a skilled artisan.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of this invention will be more readily understood from the following detailed description of the various embodiments of the invention taken in conjunction with the accompanying drawings in which:

FIG. **1** depicts an illustrative portion of an interior of a vehicle according to one embodiment of the invention;

FIG. **2** depicts an illustrative display according to another embodiment of the invention;

FIG. **3** depicts an illustrative steering device according to yet another embodiment of the invention;

FIG. **4** depicts an illustrative secondary interface according to still another embodiment of the invention; and

FIG. **5** depicts a schematic representation of illustrative systems and subsystems in a vehicle including one embodiment of the invention.

It is noted that the drawings of the invention are not to scale. The drawings are intended to depict only typical embodiments of the invention, and therefore should not be considered as limiting the scope of the invention. In the drawings, like numbering represents like elements between the drawings.

DETAILED DESCRIPTION OF THE INVENTION

The invention provides user interface systems and methods for a vehicle. A display is provided to a driver that includes a fixed area and a selectable area. The fixed area displays vehicle information such as speed, gas level, mileage, etc. The selectable area displays a page that includes parameters for one or more "optional" subsystems. An optional subsystem is a subsystem that is optionally included with a vehicle (i.e., cruise control, navigation, etc.) and/or is optionally configured and operated (i.e., radio, seat adjustment, etc.) using a computer system installed in the vehicle. One or more pages can be used to configure each optional subsystem. The desired page can be selected by the driver using a first set of input devices mounted on a side of the steering device (i.e., steering wheel) of the vehicle. Parameters displayed on the selected page can be selected and adjusted using a second set of input devices mounted on an opposing side of the steering device. A second display and/or a third set of input devices can also be provided to allow a passenger in the vehicle to view and/or select one of the pages and adjust one or more of the displayed parameters.

Turning to the figures, FIG. **1** depicts an illustrative portion of the interior of a vehicle **10** according to one embodiment of the invention. Vehicle **10** includes a steering device **12**, a dashboard **14**, and a windshield **16**. The invention provides a user interface system that includes a display **18** having a fixed area **20** and a selectable area **22**. Fixed area **20** displays vehicle information, while selectable area **22** displays one of a plurality of pages that include at least one parameter for one or more optional subsystems installed in vehicle **10**. Display **18** is mounted in dashboard **14** behind steering device **12**. As a result, when a driver of vehicle **10** sits to operate vehicle **10**, display **18** can easily be viewed by the driver by looking directly in front of steering device **12** and slightly below windshield **16**. However, it is understood that selectable area **22** can be located anywhere in vehicle **10** so that it can be more easily viewed by the driver as well as other occupants of vehicle **10**. Alternatively, vehicle **10** can include a secondary interface **27** that includes a second display **28** that displays one of the plurality of pages. Secondary interface **27** can be mounted to dashboard **14** in a manner that allows one or more passengers of vehicle **10** to easily view second display **28** and/or operate set of input devices **30**.

Display **18** can comprise any combination of means for displaying information now known or later developed. For example, the current speed of the vehicle can be displayed in fixed area **20** by speedometer **21**. Speedometer **21** can comprise a mechanical dial, a computer generated dial, a computer generated numeric value, etc. Similarly, indicators of other information can be computer or mechanically generated. In one embodiment, fixed area **20** displays vehicle information that is predetermined when display **18** is installed in vehicle **10**. Alternatively, some or all of the vehicle information displayed in fixed area **20** can be selectively modified, for example, based on a driver identification. However, the information displayed in fixed area **20** preferably cannot be modified while the vehicle is being driven. Selectable area **22** and second display **28** comprise any type of computer-aided display now known or later developed. For example, selectable area **22** and second display **28** can comprise a black and white or color liquid-crystal display (LCD).

As noted above, fixed area **20** displays vehicle information for use by the driver. Vehicle information comprises various information that is always displayed to the driver of the vehicle. For example, vehicle information typically includes the current speed of the vehicle, the current mileage of the vehicle, a temperature indicator for the engine, and an amount of gas remaining for the vehicle. Other vehicle information can also be included, such as the revolutions per minute (RPMs) for the engine, a voltage level for the battery, an oil pressure, a currently selected gear for the vehicle, a trip distance, fuel efficiency, etc. Other information can also be included in fixed area **20** such as an interior/exterior temperature, a direction the vehicle is facing, a time, a maintenance indicator, etc.

Selectable area **22** displays one of a plurality of pages of information that are used to adjust parameters for the optional subsystems installed in vehicle **10**. Each page is configured to include one or more parameters for one or more optional subsystems installed in vehicle **10**. For example, a page may include various parameters for operating an audio system for vehicle **10**, and a second page may include various parameters for obtaining directions for a trip. A user can select one of the pages to be displayed in selectable area **22** using a first set of input devices **24**. For the displayed page, the user can further select one or more of the parameters and adjust the setting for the selected parameter or perform an operation using the appropriate subsystem using a second set of input devices **26**.

In the current embodiment, the user interface system for vehicle **10** allows all control for optional subsystems to be performed by using sets of input devices **24**, **26** and/or **30**. Because of this, no switches, buttons, dials, etc. are required on dashboard **14** or the remaining interior of vehicle **10**. As a result, the interior of vehicle **10** can have a simplified, more spacious look. However, several devices for the various optional subsystems may be included on dashboard **14**. For example, a vent **31** can be included for the heating/cooling subsystem. Further, a device **32** for accepting an audio tape, and/or a device **34** for accepting a CD/DVD can be included for an entertainment subsystem. Still further, a microphone **36** and/or speaker **37** can be included for use by one or more of the optional subsystems. Speaker **37** can also be used to generate an audible sound (i.e., unique tone, name of page, etc.) when a new page is selected in selectable area **22** to inform the driver of the currently selected page.

FIG. **2** depicts an illustrative display **118** according to one embodiment of the invention. Display **118** includes a fixed area **120**, a selectable area **122**, and two warning areas **150**, **152**. Fixed area **120** displays vehicle information and selectable area **122** displays a page of parameters as discussed above. Warning areas **150**, **152** display one or more vehicle warning indicators. Any combination of means now known or later developed for displaying warning indicators can be used. For example, each indicator can comprise a predetermined area within one of warning areas **150**, **152** that includes a symbol representing a warning condition. When a warning condition is detected (i.e., low voltage from the battery), the corresponding area is illuminated to indicate the presence of the warning condition. While shown displayed in warning areas **150**, **152**, it is understood that the various warning conditions could be displayed within fixed area **120** and/or selectable area **122**.

One or more areas within selectable area **122** can be reserved to display identifiers **154** for some or all of the pages that can be displayed in selectable area **122**. The identifier that represents the page currently being displayed can be highlighted (i.e., a unique color, bold, designated location, reverse colors, etc.). As shown, an identifier **154** for a page in each subsystem is always displayed, and are

located along the top and sides of selectable area **122**. It is understood, however, that identifiers **154** can be located along only the top, only the bottom, etc., and that the identifiers **154** displayed can scroll so that a particular identifier **154** is not always displayed in selectable area **122**. Alternatively, an audio signal can be generated each time a page is selected in conjunction with or alternatively to displaying and highlighting identifiers **154**.

Initially, when a vehicle is first turned on, selectable area **122** can display only identifiers **154**. Alternatively, a default page (i.e., the last page displayed, a welcome page, a commonly accessed page, etc.) can be selected and displayed in selectable area **122**. For example, page **156** is shown for operating and configuring an audio subsystem. Page **156** includes various parameters (i.e., AM, FM, Cassette, CD, etc.) for operating features of the audio subsystem. A user can use one or more sets of input devices (i.e., sets of input devices **24**, **26**, **30** shown in FIG. **1**) to adjust the parameters and operate the radio subsystem. When a parameter is selected, one or more input devices can be used to adjust the parameter. Alternatively, selecting a parameter can present the user with a new page **156** that includes various additional parameters. For example, a user can select the cassette parameter **158** and page **156** would change to the page that contains the various parameters for operating a cassette player (shown displayed in secondary display **128** in FIG. **4**). Alternatively, an identifier **154** for the cassette player could be included along with, and accessed in a manner similar to identifiers **154**.

Returning to FIG. **1**, steering device **12** includes first set of input devices **24** and second set of input devices **26**. First set of input devices **24** are mounted on a left side of steering device **12**, while second set of input devices **26** are mounted on a right side of steering device **12**. When operating vehicle **10**, a driver can hold onto steering device **12** with two hands. This allows first set of input devices **24** to be readily operated with the left hand of the driver, and second set of input devices **26** to be readily operated with the right hand of the driver. It is understood however, that sets of input devices **24**, **26** can be operated in any manner desired by the driver.

Sets of input devices **24**, **26** allow a driver of vehicle **10** to select one of the plurality of pages to display in selectable area **22**, and to select and adjust parameters on the selected page. In one embodiment, first set of input devices **24** are operated to select one of the plurality of pages to display in selectable area **22**. Once the desired page is displayed, second set of input devices **26** are operated to select and adjust parameters on the selected page. For example, as shown in FIG. **2**, first set of input devices **24** can be operated to change the selected identifier **154**, while second set of input devices **26** can be operated to change the selected parameter **158**. Sets of input devices **24**, **26** can also be used to operate second display **28**. However, second display **28** preferably includes a third set of input devices **30** mounted thereto that operate second display **28** independently from display **18**.

FIG. **3** depicts an illustrative steering device **112** according to another embodiment of the invention. Steering device **112** includes a circular exterior **140** and a central area **142**. Central area **142** is attached to exterior **140** in a manner that allows a driver to grip exterior **140** in various locations, including locations **144**, **146**. A first set of input devices **124** is mounted to central area **142** in an area proximate location **144** of exterior **140**. A second set of input devices **126** is similarly mounted to central area **142** in an area proximate location **146** on the opposing side of central area **142**. It is understood that sets of input devices **124**, **126** can be mounted to steering device **140** using any means now known or later developed. Further, it is understood that each set of input devices **124**, **126** can include one or more input devices of the same or varying types. For example, an input device in set of input devices **124**, **126** can comprise a switch, a rotation device, a push button, a joystick, etc.

In the current embodiment, first set of input devices **124** is used to select one of the plurality of pages to display in selectable area **22** of display **18** (FIG. **1**). First set of input devices **124** can be used to move forward and/or backward one page at a time through the plurality of pages. For example, first set of input devices **124** can comprise three input devices **148**A–C. Input device **148**A is used to move a selected page forward one page and input device **148**C is used to move the selected page backward one page. Input device **148**B is used to lock in the selected page, and change the currently displayed page to the selected page. Using first set of input devices **124**, the driver can cycle through the pages (using a visual and/or audio indication of the currently selected page), and change the displayed page when the desired page is selected. Alternatively, first set of input devices **124** can comprise two input devices that are used to move forward and backward through the plurality of pages until the desired page is displayed. In yet another embodiment, first set of input devices **124** can comprise a single input device that is used to move forward and/or backward through the plurality of pages. In the latter two embodiments, the displayed page can be changed to the selected page each time an input device is used to change the currently selected page.

Second set of input devices **126** adjust one or more parameters included on the displayed page. In the current embodiment, second set of input devices **126** includes five input devices **149**A–E. Input devices **149**A, **149**B can be used to change a currently selected parameter in the displayed page. Similar to the identifiers discussed above, the selected parameter can be highlighted on the page. Once the desired parameter is selected, input devices **149**D, **149**E can be used to adjust the selected parameter higher/lower, faster/slower, up/down, etc. Input device **149**C can be used to lock in the adjusted parameter for the operation of the corresponding optional subsystem. Alternatively, input devices **149**A, **149**B can be used to select and adjust parameters. In this case, input device **149**C can be used to change the function of input devices **149**A, **149**B between selecting a parameter and adjusting the selected parameter, and input devices **149**D, **149**E would not be required.

Each input device **148**A–C, **149**A–E can include a symbol, word, unique shape, and/or raised symbol that identifies the function provided by the input device **148**A–C, **149**A–E. While shown on opposing sides (left, right) of central area **142**, it is understood that sets of input devices **124**, **126** can be mounted in any location on steering device **112**. Further, while set of input devices **124** is generally discussed as selecting a page, and set of input devices **126** is generally discussed as selecting and adjusting parameters, it is understood that the invention is not limited to this configuration, and sets of input devices **124**, **126** can perform any combination of functions.

FIG. **4** depicts an illustrative secondary interface **127** according to still another embodiment of the invention. Secondary interface **127** includes a second display **128** and a set of input devices **130**. Secondary display **128** operates in the same manner as selectable area **122** discussed with reference to FIG. **2**. Similarly, set of input devices **130** includes various input devices that operate in the same

manner as input devices **148**A–C, **149**A–E, discussed with reference to FIG. **3**. However, a passenger operating secondary interface **127** can be limited to operate only a subset of the plurality of optional subsystems that can be operated by the driver. As a result, second display **128** can include a limited number of identifiers **254** that correspond to the subsystem(s) that passengers of the vehicle are allowed to operate. Similarly, both the driver and passenger can be limited to operating only a portion of an optional subsystem. For example, the driver can be allowed to adjust only the driver side seat, while the passenger is allowed to adjust only the passenger seat.

FIG. **5** depicts a schematic representation of communications between various systems and subsystems for vehicle **10** (FIG. **1**). Computing system **160** is in communication with sets of input devices **24**, **26**, **30** and displays **18**, **28**. As discussed above, sets of input devices **24**, **26**, **30** are used by one or more users to adjust parameters for one or more of the plurality of subsystems in communication with computing system **160**. Computing system **160** configures and/or operates the various subsystems depicted in response to input commands received from sets of input devices **24**, **26**, **30** and alters the content of displays **18**, **28** accordingly. Each subsystem includes one or more parameters that can be adjusted by computing system **160**. Based on the selected parameter settings, each subsystem alters its operation.

Several common optional subsystems that include one or more adjustable parameters are depicted. A user can use doors/windows/screens subsystem **162** to lock/unlock vehicle doors, enable/disable child safety locks, open/close various windows/screens in the vehicle, etc. Lighting subsystem **166** can turn on/off various interior lights, exterior lights, high beams, turn signals, hazard lights, adjust brightness, etc. Wiper subsystem **168** can be used to turn windshield, rear window, and/or headlight wipers on/off, and to adjust the speed and delay at which they operate. Each of these subsystems **162**, **164**, **166**, **168** are commonly included in all vehicles and are generally operated using input devices located within the vehicle. It is understood that the user interface system of the invention can be used to supplement and/or replace some or all of these input devices.

Temperature subsystem **170** can be used to operate heating/cooling settings (i.e., turn vents and defrost on/off, adjust air intake, etc.), select a desired temperature for one or more zones within a vehicle, monitor an outdoor temperature, etc. Entertainment subsystem **172** can include an audio subsystem for operating a radio, tape player, CD player, etc., and/or an audio/visual subsystem for operating a television, VCR, DVD player, etc. Cruise control subsystem **174** can be used to set a desired constant speed and turn cruise control on/off. Time subsystem **176** can be used to set and display the time, date, etc. Customization subsystem **178** can be used to adjust the seat, mirrors, select a custom sound for a horn, etc. Navigation subsystem **180** can be used to map out directions, show current heading, plan a trip, etc. Service subsystem **182** can be used to inform the owner of scheduled maintenance (based on miles and/or date), keep a record of past maintenance, etc. Communication subsystem **184** can include a wireless telephone (i.e., cellular phone), an emergency communication device, an information device, etc.

It is understood that the various subsystems are presented for illustrative purposes only. As a result, one or more of the subsystems can be combined into a single subsystem, split into multiple subsystems, operated apart from the current invention, and/or can be excluded from a vehicle. Further, it is understood that the various subsystems can be implemented using any combination of hardware or software. As such, some or all of the various subsystems may be implemented on computing system **160**. For example, memory subsystem **186** can be used to store and retrieve a default set of parameters for one or more drivers of vehicle **10** (FIG. **1**). Consequently, a driver can be presented with a page that identifies various sets of parameters by, for example, an individual's name. Based on a selected set of parameters, computing system **160** can adjust parameters for one or more of the subsystems. For example, a desired temperature for temperature subsystem **170**, seat and mirror location for customization subsystem **178**, etc. can be adjusted. Further, it is understood that operation of the various subsystems may use one or more common output devices and/or may effect the operation of one or more other subsystems. For example, communication subsystem **184** can use speaker **37** (FIG. **1**) that is also used by entertainment subsystem **172** to provide audio for one or more audio devices. Additionally, memory subsystem **186** and/or customization subsystem **178** can be used to select and change information displayed in fixed area **20** (FIG. **1**). For example, a first driver may desire to view an indication of engine RPMs and a numeric display of vehicle speed, while a second driver may desire to view the current time, outdoor temperature, and an analog indication of vehicle speed. By selecting the appropriate set of parameters, fixed area **20** can be altered accordingly. In current vehicles, some or all of the parameters for the various subsystems are adjusted using various input devices commonly included on a steering column, driver door, passenger door, dashboard, etc. It is understood that input devices for these subsystems or any of the subsystems can be included apart from sets of input devices **24**, **26**, **30**. Further, it is understood that any of the various subsystems can be operated independently from computing system **160**. Communications between computing system **160**, the various input/output devices, and the various subsystems can be implemented using any means now known or later developed.

The foregoing description of various embodiments of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed, and obviously, many modifications and variations are possible. Such modifications and variations that may be apparent to a person skilled in the art are intended to be included within the scope of the invention as defined by the accompanying claims.

What is claimed is:

1. A user interface system for a vehicle having a steering device, the system comprising:

a plurality of pages, wherein each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle;

a display mounted behind the steering device, the display including a fixed area and a selectable area, wherein the fixed area displays vehicle information and the selectable area displays one of the plurality of pages, and wherein the fixed area and the selectable area each comprise a unique and static portion of the display; and

a computing system in communication with the display device, wherein the computing system operates each of the plurality of optional subsystems based on the at least one parameter.

2. The user interface of claim **1**, further comprising a first set of input devices in communication with the computing system, wherein the first set of input devices are mounted on the steering device.

3. The user interface of claim **2**, further comprising a second set of input devices in communication with the

computing system, wherein the first set of input devices select one of the plurality of pages to display in the selectable area, and wherein the second set of input devices adjust parameters in the page displayed in the selectable area.

4. The user interface of claim **3**, wherein the first set of input devices and the second set of input devices are mounted on opposing sides of the steering device.

5. The user interface of claim **1**, further comprising a secondary interface that includes a second display in communication with the computing system, wherein the second display selectively displays at least one of the plurality pages.

6. The user interface of claim **5**, wherein the secondary interface further includes a third set of input devices in communication with the computing system and mounted on the second display, wherein the third set of input devices select one of the plurality of pages to display in the second display and adjust parameters on the page displayed in the second display.

7. A user interface system for a vehicle having a steering device, the system comprising:

a plurality of pages, wherein each page includes at least one parameter for at least one of a plurality of optional subsystems for the vehicle;

a display including a fixed area and a selectable area, wherein the fixed area displays vehicle information and the selectable area displays one of the plurality of pages, and wherein the fixed area and the selectable area each comprise a unique and static portion of the display;

a first set of input devices that select one of the plurality of pages to display in the selectable area; and

a second set of input devices that adjust the at least one parameter on the selected page;

wherein the first set of input devices and the second set of input devices are mounted on opposing sides of the steering device.

8. The system of claim **7**, further comprising a secondary interface that includes a third set of input devices.

9. The system of claim **8**, wherein the secondary interface further includes a second display that displays one of the plurality of pages, and wherein the third set of input devices select one of the plurality of pages to display in the second display and adjust the at least one parameter on the page displayed in the second display.

10. The system of claim **7**, further comprising a computing system in communication with the display, the first set of input devices, the second set of input devices, and the plurality of optional subsystems, wherein the computing system operates the display and the plurality of optional subsystems based on the input devices.

11. The system of claim **7**, wherein the first set of input devices consists of three input devices and the second set of input devices consists of five input devices.

12. The system of claim **7**, wherein the selectable display is mounted behind the steering device.

13. The system of claim **7**, wherein the plurality of optional subsystems includes at least two of: a temperature subsystem, an entertainment subsystem, a customization subsystem, a cruise control subsystem, a navigation subsystem, a communications subsystem, a time subsystem, a service subsystem, and a memory subsystem.

14. The system of claim **7**, wherein the plurality of optional subsystems includes at least one of: a doors/windows/screens subsystem, a lighting subsystem, and a wiper subsystem.

15. The system of claim **7**, wherein the display further includes at least one warning area that displays a plurality of vehicle warning indicators.

16. A method of operating a plurality of optional subsystems for a vehicle having a steering device, the method comprising:

displaying vehicle information in a fixed area of a display;

displaying one of a plurality of pages in a selectable area of the display, wherein each page includes at least one parameter for at least one of the plurality of optional subsystems, and wherein the fixed area and the selectable area each comprise a unique and static portion of the display;

selecting a page to display in the selectable area using a first set of input devices mounted on a first side of the steering device; and

adjusting die at least one parameter on the selected page using a second set of input devices mounted on a second side of the steering device.

17. The method of claim **16**, further comprising displaying one of the plurality of pages in a second display.

18. The method of claim **17**, further comprising:

selecting one of the plurality of pages to display in the second display using a third set of input devices mounted on the second display; and

adjusting the at least one parameter on the selected page displayed in the second display using the third set of input devices mounted on the second display.

19. The method of claim **16**, further comprising:

displaying an identifier for each of the plurality of pages in the selectable area; and

highlighting the identifier for the page being displayed.

20. The method of claim **16**, further comprising generating an audible sound each time a mew page is selected fur display.

21. The user interface of claim **1**, wherein an appearance of vehicle information in the fixed area can be modified by a user and wherein the modification cannot occur while the vehicle is being driven.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

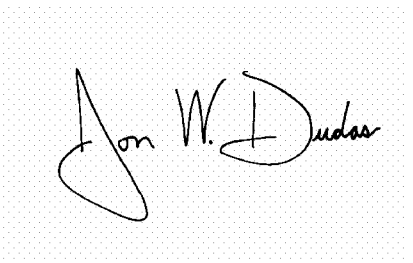
PATENT NO. : 6,842,677 B2
DATED : January 11, 2005
INVENTOR(S) : Prakash S. Pathare

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 10,
Line 30, delete "die" and insert -- the --.
Line 48, delete "mew" and insert -- new --.
Line 48, delete "fur" and insert -- for --.

Signed and Sealed this

Tenth Day of May, 2005



JON W. DUDAS
Director of the United States Patent and Trademark Office